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| 10/524,128 | 03/11/2005 | Yoshitsugu Iijima | 05092/HG | 2460 |
| 1933 7590 01/29/2010 FRISHAUF, HOLTZ, GOODMAN & CHICK, PC 220 Fifth Avenue 16TH Floor NEW YORK, NY 10001-7708 | | | | |
| EXAMINER YANG, JIE | | | | |
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/524,128

Applicant(s)

IIJIMA ET AL.

Examiner

JIE YANG

Art Unit

1793

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 November 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5-17 and 22-29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5-17 and 22-29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB-08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/13/2009 has been entered.

Status of the Previous Rejection

Previous rejection of claim 18 under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Hino et al (EP 1359230, thereafter EP'230) is withdrawn since claim 18 has been cancelled.

Status of the Claims

Claims 1-4 and 18-21 have been cancelled, claims 5, 8, 12, and 16 are amended, and claims 5-19, 22-29 are pending in application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 5-17 and 22-29 are rejected under 35 U.S.C. 103(a) as obvious over Yoshimichi Hino et al (EP 1359230, thereafter EP'230).

Regarding claims 5, 8, 12, and 16, EP'230 teaches a method for manufacturing a steel plate comprising the steps of: hot-rolling steel slab; quenching or accelerated cooling the steel plate; two or more cycles induction heating the steel plate by several induction heating apparatus and these processes are conducted at on-line basis (Page 2, paragraphs [0001]-[0008] and figure 1 of EP'230), which reads on the limitations of heat treating a steel product which has been subjected to quenching or accelerated cooling on a hot rolling line after hot rolling by passing the steel product at least once through a plurality of induction heating apparatuses, which are installed on the hot rolling line as recited in the instant claims. Regarding the optimum number of time of passage by determining steps a)-d), EP'230 teaches controlling the travel speed according dimension of object, induction power, the number of heating cycles and

target heating temperature (Table 1, and Page 3, paragraph [0010] to page 4, paragraph [0023] of EP'230). The transfer speed (step b) of the steel product is a result-effective variable in term of uniform heating, which is evidenced by EP'230. It would have been obvious to one skilled in the art to have optimized travel speed, for example, the speed is changed every time of passing through the induction heating apparatus in order to obtain desired uniform heating. See MPEP 2144.05 II. The number of times of passage through the induction heating apparatus (step d) is also a result-effective variable in term of uniform heating during the heating time, which evidenced by EP'230. EP'230 teaches controlling the travel speed according dimension of object, induction power, the number of heating cycles and target heating temperature (Table 1, and Page 3, paragraph [0010] to page 4, paragraph [0023] of EP'230). It would have been obvious to one skilled in the art to have optimized number of times of passage through the induction heating apparatus such that surface temperature and thickness-wise center temperature of the steel product fall in a predetermined temperature range (as claimed in the instant claims 5, 8), the predetermined upper limit temperature (as claimed in the instant claims 12 and 16), in the shortest time as claimed in the instant claims. See MPEP 2144.05 II.

Regarding the newly added feature of controlling the peak value of the surface temperature in the instant claims 5, 8, 12, and 16, EP'230 teaches that the heating cycles use a part or whole of six solenoid heating units so that the surface temperature should not exceed the target temperature (Page 3, paragraph [0012] and Fig.2-3 and 7-11 of EP'230), which reads on the limitation of controlling the peak value of the surface temperature in the instant claims.

Regarding claims 6-7, EP'230 teaches a method for manufacturing a steel plate comprising the steps of two or more cycles induction heating the steel plate by several induction heating apparatus and these processes are conducted at on-line basis (Page 2, paragraphs [0001]-[0008] and figure 1 of EP'230), which reads on the limitations of claims 6-7.

Regarding claims 9-11, the number of times of passage through the induction heating apparatus is a result-effective variable in term of uniform heating during the heating time, which evidenced by EP'230. Therefore, it would have been obvious to one skilled in the art to have optimized number of times of passage through the induction heating apparatus such that surface temperature and thickness-wise center temperature of the steel product fall in a predetermined temperature range within a

target treatment time as claimed in the instant claims. See MPEP 2144.05 II.

Regarding claims 13-15, the heat treatment time is recognized as a result-effective variable in term of uniform heating which is evidenced by EP'230. EP'230 teaches controlling the heating time according dimension of object, induction power, the number of heating cycles and target heating temperature and travel speed (Table 1, and Page 3, paragraph [0010] to page 4, paragraph [0023] of EP'230). Therefore, it would have been obvious to one skilled in the art to have optimized heating time according different uniform heating affective parameters, for example: setting target heating time in order to prevent a succeeding steel product from waiting or shortest waiting time as claimed in the instant claim 13; making the power consumption minimum as claimed in the instant claim 14; and the number of time of passage being heated three or more and a transfer speed at last time of passage is larger than that at the first time of passage as claimed in the instant claim 15. See MPEP 2144.05 II.

Regarding claim 17, the heat treatment time is recognized as a result-effective variable in term of uniform heating as discussed in rejection for claims 12-15. Therefore, it would have been obvious to one skilled in the art to have optimized heating time according the number of time of passage being

heated three or more and a transfer speed at last time of passage is larger than that at the first time of passage as claimed in the instant claim 17. See MPEP 2144.05 II.

Regarding claims 22, 24, 26, and 28, which depend on claims 5, 8, 12 and 16, respectively, EP'230 teaches a method for manufacturing a steel plate comprising the steps of: hot-rolling steel slab; quenching or accelerated cooling the steel plate; two or more cycles induction heating the steel plate by several induction heating apparatus and these processes are conducted at on-line basis (Page 2, paragraphs [0001]-[0008] and figure 1 of EP'230). As discussed in the rejections for claims 5, 8, 12 and 16, the transfer speed (step b) and the number of times of passage through the induction heating apparatus (step d) are recognized as result-effective variables in term of uniform heating during the heating time, which is evidenced by EP'230. Therefore, it would have been obvious to one skilled in the art to have optimized the parameters to solving an optimization problem at every time of passage, for example, transfer speed, amount of the electric power, and constraint conditions as claimed in the instant claims in order to obtain desired uniform heating. See MPEP 2144.05 II.

Regarding claims 23, 25, 27 and 29, which depend claims 22, 24, 26, and 28, respectively. EP'230 teaches a method for manufacturing a steel plate comprising the steps of: hot-rolling steel slab; quenching or accelerated cooling the steel plate; two or more cycles induction heating the steel plate by several induction heating apparatus and these processes are conducted at on-line basis (Page 2, paragraphs [0001]-[0008] and Fig.1 of EP'230). It is well settled that it is within the level of ordinary skill to operate a process continuously. In re Dilnot 138 USPQ 248; In re Korpi 73 USPQ 229; In re Lincoln 53 USPQ 51. Although EP'230 does not specify storing in a table for the data of electric power and transfer speed, EP'230 clearly teaches controlling the travel speed according dimension of object, induction power, the number of heating cycles and target heating temperature (Table 1, and Page 3, paragraph [0010] to page 4, paragraph [0023] of EP'230). Therefore, it would have been obvious to one skilled in the art to have stored the predetermined electric power and transfer speed data as claimed in the instant claims in the process of EP'230 because storing data is an essential step for the a process control.

Response to Arguments

Applicant's arguments filed 11/13/2009 have been fully considered but they are not persuasive. Regarding the arguments related to the amended features in the instant claims, the Examiner's position is stated as above.

Regarding the 132 Affidavits filed on 11/13/2009, it has been fully considered but is insufficient to overcome the rejections of claims 5-17 and 22-29 based upon 35 U.S.C 103(a) as obvious over EP'230 because the simulation model in the instant "132 Affidavits" has assumed that Hino et al (EP'230) does not limit the surface temperature in the equation (1) and concluding that the results of simulation for Hino et al showed that the temperature exceeded the upper limit temperature (750°C and A_{c1} transformation point, in the simulation model). However, as pointed out in the rejections for the instant claims 5, 8, 12, and 16 above, EP'230 teaches that the heating cycles use a part or whole of six solenoid heating units so that the surface temperature should not exceed the target temperature (Page 3, paragraph [0012] and Fig.2-3 and 7-11 of EP'230). In another word, EP'230 teaches controlling the upper limit temperature and the Examiner notes that all of the upper limit temperature data of EP'230 do not exceed 750°C and A_{c1} transformation point (Refer to examples and Fig.2-3 and 7-11 of EP'230).

In the remark, the Applicant argues the difference between prior art and instant invention in:

- 1) input and output;
- 2) flow of processing; and
- 3) Movements of the steel material.

EP'230 requires the temperature measurement to start heating and it is necessary to wait until the surface temperature reaches or is lower than the mean temperature in the thickness direction of the steel plate, which is distinct to the instant claims, which is not necessary to measure the surface temperature at every heating time and wait until the surface temperature is decreased.

In response, the Examiner disagrees with the Applicant's arguments because as pointed out in the rejection for the instant claims 5-17 and 22-29 above, EP'230 teaches controlling the travel speed according to the dimension of object, the induction power, the number of heating cycles and the target heating temperature (Table 1, and Page 3, paragraph [0010] to page 4, paragraph [0023] of EP'230). In the Eq.(1) of Hino et al (EP'230) teaches the relationship between the power and the dimension of product, the heating time (rolling pitch), the temperature rise, and other parameters. EP'230 clearly teaches that the target temperature and the travel speed are basic parameters for the heating process (Paragraphs [0012]-[0013] of EP'230). These parameters are result-effective variables in terms of the heating conditions. The Examiner further notes that EP'230 teaches the experimental data for time-temperature (surface or thickness center). Therefore, it would have been obvious to one skilled in the art to adjust the heating according to these experimental data for heating the material without waiting. MPEP 2144.05 II. Regarding the difference of the "input-output model", the "flow of processing" and the "movement of the steel material" between EP'230 and the instant invention, because EP'230 teaches the relationship between power and the dimension of product, the heating time (rolling pitch), the temperature rise, and other

parameters, it would have been obvious to one skilled in the art to adjust these parameters to perform different operation model. MPEP 2144.05 II.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jie Yang whose telephone number is 571-2701884. The examiner can normally be reached on IFP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-2721244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JY

/Roy King/

Supervisory Patent Examiner, Art Unit 1793